

# Summary of Pertussis Investigation and Control Guidelines

## Colorado Department of Public Health and Environment

### Communicable Disease Epidemiology Program

#### Clinical Illness of Pertussis

- The incubation period of pertussis is usually 7 to 10 days, with a range of 4 to 21 days. The clinical course of illness is divided into three stages.
- The **catarrhal stage** is characterized by the onset of runny nose, sneezing, low-grade fever, and a mild cough. Cough gradually becomes more severe and after 1-2 weeks the next stage develops.
- The **paroxysmal stage** is characterized by coughing fits (paroxysms), which may be followed by a high-pitched inspiratory whoop, vomiting, and/or apnea. This stage usually lasts 1-6 weeks, but may continue for 10 weeks.
- The **convalescent stage** is characterized by fewer paroxysmal coughing episodes and usually disappears in 2-3 weeks, but may continue for months.
- **Pertussis Infectious Period**
  - Most infectious during the catarrhal (early) stage.
  - Infectious during the first 21 days of cough if not treated with appropriate antibiotic.
  - No longer infectious after 5 days of treatment with appropriate antibiotic.

#### Clinical Case Definition of Pertussis

- A cough illness lasting at least 14 days with one of the following: paroxysms of coughing, inspiratory “whoop”, or post-tussive vomiting, and without other apparent cause (as reported by a health professional).

#### Laboratory Criteria for Pertussis Diagnosis

- Isolation of *Bordetella pertussis* from a clinical specimen (culture positive), or
- Positive polymerase chain reaction (PCR) assay for *B. pertussis* DNA.

Note: Serological testing for *B. pertussis* is not standardized (except tests run by MA State Health Department Lab). Direct fluorescent antibody (DFA) testing for *B. pertussis* has low sensitivity and variable specificity. For these reasons, serology and DFA results should not be relied on as a criterion for laboratory confirmation of pertussis.

#### Pertussis Case Classification

- Confirmed:
  - a. A positive culture for *B. pertussis* and an acute cough illness of any duration, or
  - b. Meets the clinical case definition and is confirmed by PCR, or
  - c. Meets the clinical definition and is epidemiologically linked directly to a case confirmed by either culture or PCR.
- Probable: A case that meets the clinical case definition, is not laboratory confirmed, and is not epidemiologically linked to a laboratory-confirmed case; also includes cases meeting the outbreak case definition.

Outbreak: *Two or more cases involving two or more households clustered in time (e.g., occurring within 42 days of each other) and either epi-linked or sharing a common space (e.g., in one building) where transmission is suspected to have occurred (e.g. a school). One case in an outbreak must be lab confirmed (PCR positive and meets case definition, or culture positive). In an outbreak setting, a case may be defined as an acute cough illness lasting  $\geq 2$  weeks without other symptoms.*

**Only confirmed and probable cases are reported to CDC.**

- Suspect: a clinical syndrome compatible with pertussis; an illness consistent with pertussis and without other apparent cause, such as:
  - a. cough of  $\geq 7$  days, or
  - b. paroxysmal cough of any duration, or
  - c. cough with inspiratory whoop, or
  - d. cough associated with apnea in an infant, or
  - e. cough in a close contact of a confirmed or probable case.

**1. Investigate all suspect, probable, and confirmed pertussis reports. Evaluate whether reported case's symptoms are compatible with pertussis.**

**2. Identify close contacts:**

- a. Household contacts;
- b. Other persons having direct prolonged exposure to the case while case was contagious and was coughing or sneezing.
- c. The following are examples of pertussis exposures of close contacts:
  - 1. Direct face-to-face contact for an undefined time period with an infectious pertussis case (case coughing  $< 21$  days and has not completed 5 days of appropriate antibiotic treatment).
  - 2. Shared confined space in close proximity for a prolonged period of time, such as  $\geq 1$  hour, with an infectious pertussis case. For example, riding in a car with a pertussis case.
  - 3. Direct contact with respiratory, oral, or nasal secretions from an infectious pertussis case (e.g., an explosive cough or sneeze in the face, sharing food, sharing eating utensils, kissing, mouth-to-mouth resuscitation, or performing a full medical exam including examination of the nose and throat without wearing a mask).

Note: See CD Manual for information about “high-risk contacts” (such as infants  $< 1$  year of age).

**3. Recommend antibiotics for the index case (first case reported to public health authorities), all household and close contacts. Antibiotics are recommended to:**

- a. Render the index case and symptomatic household or other close contacts non-infectious (note: administering appropriate antibiotics during the catarrhal stage may reduce the severity of pertussis illness);
- b. Abort possibly incubating infection in asymptomatic household or other close contacts, especially if they have potential to expose young children.

Consult the CDPHE “Guidance on the Treatment and Prophylaxis of Pertussis Cases and Contacts” for appropriate antibiotics and specific dosages.

**4. Recommend DTaP/Tdap vaccination as appropriate for exposed children, adolescents and**

**adults. Exposed children < 7 years of age whose last DTaP was more than 3 years ago should be vaccinated.**

**5. Evaluate close contacts for pertussis symptoms, and when possible collect specimens for lab testing from symptomatic persons.**

If possible collect a nasal wash or nasopharyngeal swab from symptomatic persons for pertussis testing. (The Children's Hospital accepts only nasal wash specimens.) It is especially important to collect specimens from symptomatic persons who may spread pertussis to a new setting or who are contacts to a probable case. Pertussis may be detected by PCR even if the person has been treated or has been coughing for sometime. Pertussis PCR testing is available at CDPHE Laboratory. Refer to CDPHE "Pertussis Specimen Collection" for instructions.

**6. Recommend exclusion from work, childcare, or school for the following symptomatic persons until they have completed 5 days of an appropriate antibiotic or until 21 days after cough onset (if antibiotics are not taken):**

- a. Children reported as suspect, probable, or confirmed cases and children identified as symptomatic (including slight coughs) contacts of a confirmed or probable case.
- b. Adults reported as suspect, probable or confirmed cases and adults identified as symptomatic (including slight coughs) contacts of a confirmed or probable case who are unable to work without exposing other individuals. Exclusion is especially important for employees in high-risk occupations (e.g. school teacher, health care worker, childcare center staff).

**7. Conduct follow up interviews on:**

- a. Reported suspect, probable, or confirmed pertussis cases to determine whether they meet the clinical case definition (coughed 14 days and had a paroxysmal cough).
- b. Symptomatic contacts who coughed less than 14 days or did not have a paroxysmal cough at the time of the initial interview to determine whether they meet the clinical case definition.
- c. Asymptomatic contacts 21 days following their exposure to determine whether they have remained disease-free, unless the contact was informed to notify the health department if they develop a cough after the initial interview.

**8. Complete the Pertussis Surveillance Worksheet for all confirmed and probable cases. Enter information from surveillance worksheet into CEDRS.**

**For additional information see the following websites:**

1. CDPHE Communicable Disease Manual Home Page, Pertussis chapter, [www.cdphe.state.co.us/dc/Epidemiology/dc\\_manual.html](http://www.cdphe.state.co.us/dc/Epidemiology/dc_manual.html)
2. CDPHE Disease Control and Environmental Epidemiology website, Pertussis Page, [www.cdphe.state.co.us/dc/Epidemiology/Pertussis](http://www.cdphe.state.co.us/dc/Epidemiology/Pertussis),

*Please contact your CDPHE Communicable Disease Epidemiologist for questions.*